

IN THE CLAIMS

The current listing of the claims replaces all previous amendments and listings of the claims.

1. (Currently Amended) A plasma processing method, comprising the steps of:
supplying a processing gas into an airtight processing chamber, plasmizing the processing gas, and plasma-processing a target layer formed on an object to be processed by using a resist film as a mask,

wherein the plasma-processing is conducted while a process condition is being changed on the basis of a variation of a thickness reduction rate of the resist film.

2. (Currently Amended) The plasma processing method of claim 1, wherein the plasma-processing step includes:

a first process of plasma-processing the target layer while the thickness of the resist film is being monitored until the thickness reduction rate of the resist film reaches a predetermined value; and

a second process of plasma-processing the target layer under a changed process condition in which selectivity against the resist film is higher than in the first process.

3. (Original) The plasma processing method of claim 2, wherein the target layer includes an oxide layer containing silicon, the first process is conducted by using a processing gas containing a CF-based gas, and the second process is conducted by using a processing gas containing a CHF-based gas.

process is conducted under a process condition by using a processing gas containing one or more components reduced in the chamber during the first process.

4. (Currently Amended) The plasma processing method of claim 2, wherein the

second process is conducted under a process condition by using a processing gas containing one or more components reduced in the chamber during the first process.

5. (Original) The plasma processing method of claim 4, wherein the target layer includes an oxide layer containing silicon, the first process is conducted by using a processing gas containing a CF-based gas, and the second process is conducted by using a processing gas containing a CO_x gas.

6. (Original) The plasma processing method of claim 2, wherein the thickness of the resist film is observed by detecting interference waves of rays reflected from the resist film in the first process.

7. (New) The plasma processing method of claim 2, wherein the second process is conducted by using a processing gas containing a gas species which is identical to a by-product gas species produced during first process to reduce the thickness reduction rate of the resist film, an amount of the by-product gas species being reduced as the first process proceeds.